CLAIMS

1. Tensionless leveller (1) intended for levelling a metal strip (5), having an entry and an exit, comprising n+1 motorized rolls (4,4'), of the type comprising two superposed cassettes (2, 3) each supporting at least n/2 rolls (4, 4') of constant radius R, offset with respect to one another and placed alternately above and below the path of the strip (5), the axis of each of the rolls (4, 4') of one cassette (2, 3) being separated from the axis of the immediately successive roll (4,4') of the other cassette by a centre-to-centre spacing E_k, in which:

   for k from 2 to 4, $R/E_k = R/E_1$;

   for k from n-3 to n, $R/E_k = R/E_n$ and $R/E_n < R/E_1$; and

   for k from 5 to n-1, $R/E_n \leq R/E_k \leq R/E_1$, and $R/E_k \leq R/E_{k+1}$,

   said leveller (1) optionally including means for adjusting the centre-to-centre spacings E_k.

2. Leveller (1) according to Claim 1, in which $n \geq 8$.

3. Leveller (1) according to either of Claims 1 and 2, in which, when the thickness of the strip (5) to be levelled is between 0.5 and 3 mm, $14 \leq n \leq 22$.

4. Leveller (1) according to either of Claims 1 and 2, in which, when the thickness of the strip (5) is between 3 and 15 mm, $10 \leq n \leq 16$.

5. Leveller (1) according to any one of Claims 1 to 4, in which:

   for k from 1 to x, $0.90 \leq R/E_k \leq 0.95$; and

   for k from x+1 to n, $0.70 \leq R/E_k \leq 0.80$.

6. Leveller (1) according to any one of Claims 1 to 4, in which:

   – for k from 1 to x, $0.90 \leq R/E_k \leq 0.95$;

   – one of the centre-to-centre spacings E_x, where $5 \leq x \leq n-4$, being such that:

$$0.80 \le R/E_x \le 0.90; \text{ and}$$

— for k from x+1 to n, $0.70 \le R/E_k \le 0.80$.

7. Leveller (1) according to any one of Claims 1 to 4, in which:

— for k from 1 to x, $0.90 \le R/E_k \le 0.95$;

— one of the centre-to-centre spacings E_x, where $5 \le x \le n-4$, being such that :

$$0.80 \le R/E_x \le 0.90, \text{ and } 0.75 \le R/E_{x+1} \le 0.85; \text{ and}$$

— for k from x+2 to n, $0.70 \le R/E_k \le 0.80$.

8. Method for levelling a metal strip (5) in which a leveller (1) according to any one of Claims 1 to 7 is used, leveller in which the degree of plastic deformation is at least 60% and at most 90%.

9. Levelling method according to Claim 8, in which the metal strip (5) is a steel strip.